Follicular Ameloblastoma: Resection And Reconstruction UsingPectoralis Major Mycocutaneous Flap

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Abstract:

In 2005, the World Health Organization histologically classified ameloblastomas into solid/multicystic, extra osseous/peripheral, desmoplastic, and unicystic types. Solid/multicystic ameloblastomas were further divided into follicular and plexiform types. Thefollicular type has 4 subtypes, the spindle cell type, acanthomatous type, granular type, and basal cell type. The surgical options for Ameloblastoma vary from simple enucleation (with or without bony curettage) to radical excision. The histological infiltration of these tumours beyond macroscopic and even radiological boundaries allows creation of safety margins to promote recurrences. Thus, tumour enucleation and curettage may cause not only an unacceptable likelihood of recurrence but also an increasing risk of fractures due to the maintenance of unhealthy and/or weakened bony structures. Considering undetectable microscopic spreading, especially through the central cancellous bone, the radical surgical excision appears as the modality of treatment with a reasonable curative rate for both primary and recurrent ameloblastomas.

Keywords: Ameloblastoma, Follicular ameloblastoma, Hemimandibulectomy, PMMC

INTRODUCTION

Ameloblastoma, is derived from the English word “amel” which means enamel and the Greek word “blastos” which means the germ. Ameloblastoma was first described in 1827 by Cusack. In 1885, Malassez introduced the name “adamantinoma,” which is presently used to illustrate a rare form of bone cancer described by Fisher in 1913. It was first detailed and described by Falkson in 1879. The term ameloblastoma was coined by Ivey and Churchill in 1930, a currently accepted term.[1] It is considered as a true neoplasm as the name implies it mimics the cells of the enamel-forming organ. It was described by Robinson in 1937, as a benign tumour that is “usually unicentric, non-functional, intermittent in growth, anatomically benign and clinically persistent.” [2]

The aim of this article was to report a case of follicular Ameloblastoma in left lower mandiblein a 54-year-old man. Patient gave history of mild intermittent pain and swelling since last 4 months. Based on its extent histological features and radiographic interpretation the treatment was planned for surgical excision and reconstruction using PMMC flap.

CASE REPORT

A 54-year-old male patient presented to our hospital with a complaint of swelling in the left lower back tooth region (Fig. The patient had noticed the swelling 4 months previously, andit had slowly increased to its present size. During a clinical examination, a firm swelling of the left mandibular alveolar ridge, which extended from the first premolar to the third molar,was observed (Figure 1). Patient complained of pain and difficulty in opening mouth.

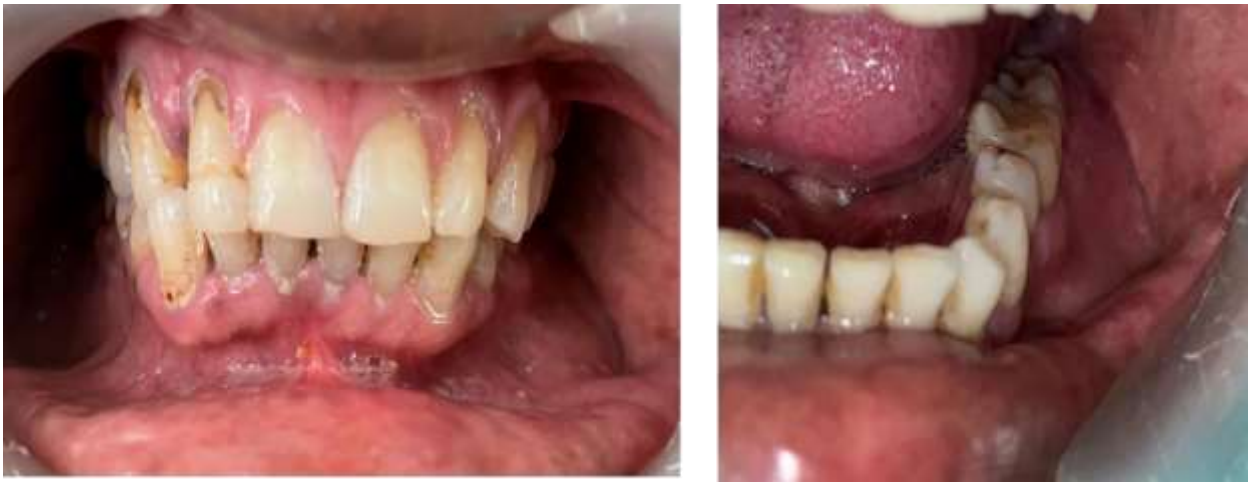


Figure 1: An image of the oral cavity obtained during the initial examination showing apainless mass in the lower left premolar region.

His past medical history was not relevant. An Orthopantomogram revealed a radiolucent lesionwith a multiple septa giving classical honeycomb appearance and root resorption of the first molar and second molar (figure 2). CBCT of the lesion showed a predominantly lytic expansilemultilocular lesion measuring (figure 3).

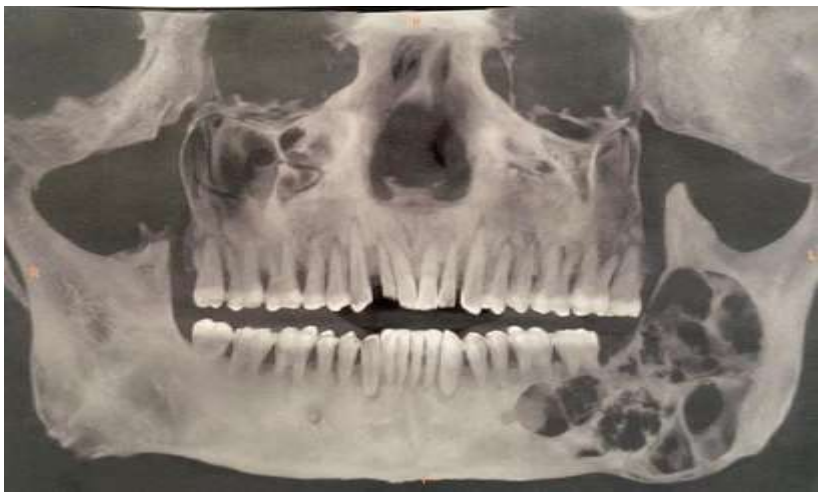


Figure 2: An OPG showing a well-defined large radiolucent lesion in the right mandible.

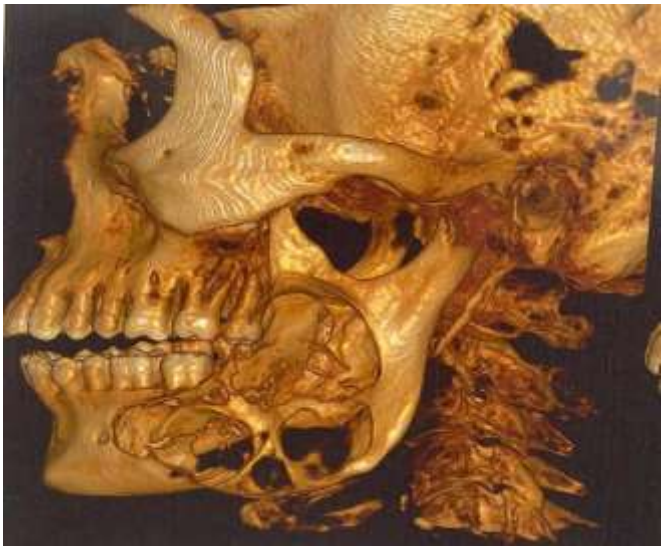


Figure 3: CBCT scan showing a large unilocular radiolucent lesion in the left mandible.

A clinical diagnosis of a benign tumour was made. An incisional biopsy was conducted, and the lesion was diagnosed as an Ameloblastoma–follicular variant tumour. Based on the histological diagnosis and radiographic interpretation the excision and reconstruction using

PMMC flap. Collar incision was marked and infiltration was done using 2% lignocaine with adrenaline. Layer wise dissection was done through skin, subcutaneous tissue and platysma was exposed. Inferior border of mandible was reached dissecting in a subplatysmal plane. Facial artery and vein were identified and ligated. Flap was raised and defect site was exposed. First premolar was extracted and mandible distal to it was resected using giggly saw. Posteriorly ramus region of mandible was exposed dissecting master muscle. Mandible was exposed posteriorly by dissecting medial pterygoid muscle, lateral pterygoid muscle and temporalis muscle. Using straight bur mandible was trimmed in sub condylar region and specimen was taken out. DP saving incision was marked to take pectoralis major Myocutaneousflap. Infiltration was done using 2% lignocaine with adrenaline. Identifying vascular pedicle, pectoralis major Myocutaneous flap was exposed. For exposure of flap lateral pectoral nerve was sacrificed. Subcutaneous tunnel was made for passage of flap to defect. Closure was done.(figure 4)

The histopathology of the lesion was characterized by a stroma containing abundant collagen fibres and scattered tumour nests or strands composed of spindle-shaped odontogenic epithelialcells. In addition, areas of cystic degeneration and squamous metaplasia were also seen (Figure5). The lesion histopathologically consisted of areas of desmoplastic Ameloblastoma and follicular Ameloblastoma and was diagnosed as a hybrid Ameloblastoma. The patient'spostoperative course was uneventful, and a follow-up review conducted showed

no evidence of recurrence (Figure 6).

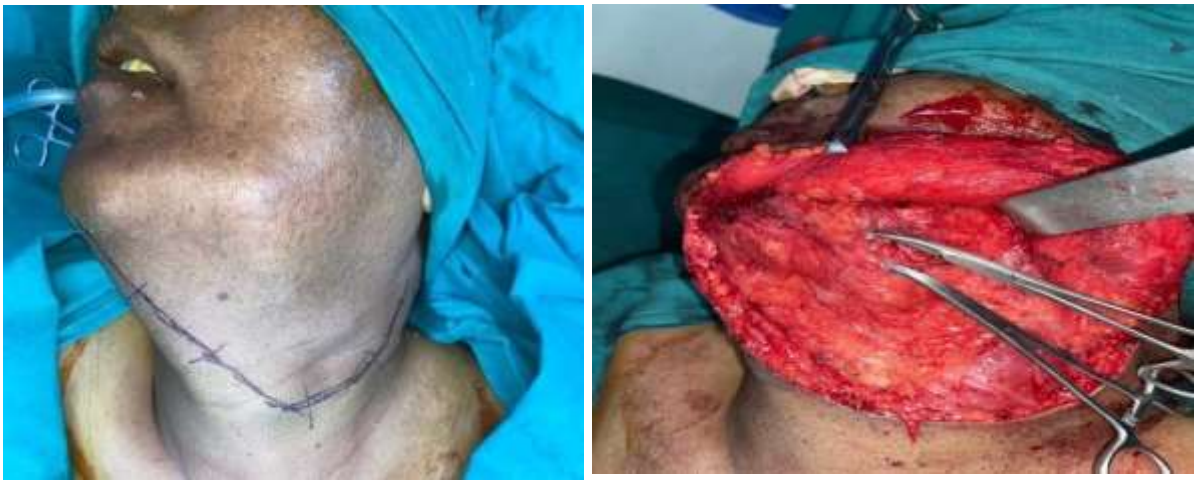


Figure 4.1 : Collar incision was marked and infiltration was done using 2% lignocaine with adrenaline. Layer wise dissection was done through skin, subcutaneous tissue and platysma was exposed. Inferior border of mandible was reached dissecting in a subplatysmal plane.

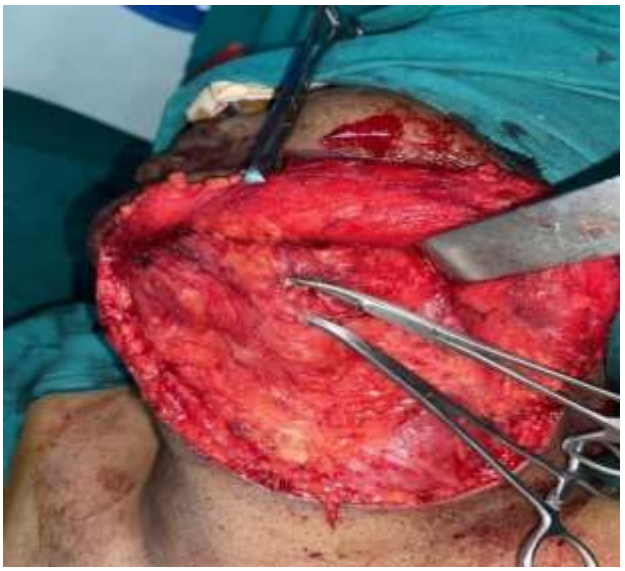


Figure 4.2: Facial artery and vein was identified and ligated. Flap was raised and defect sitewas exposed.

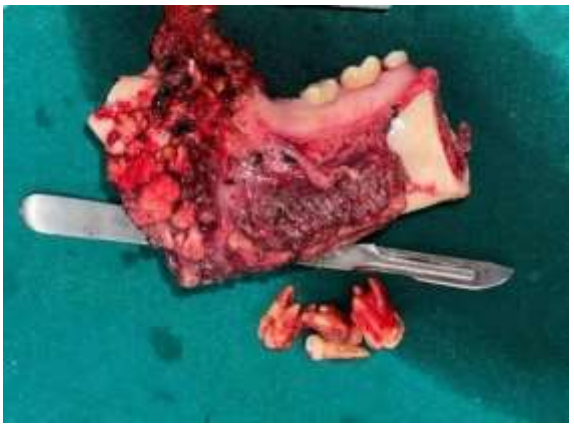
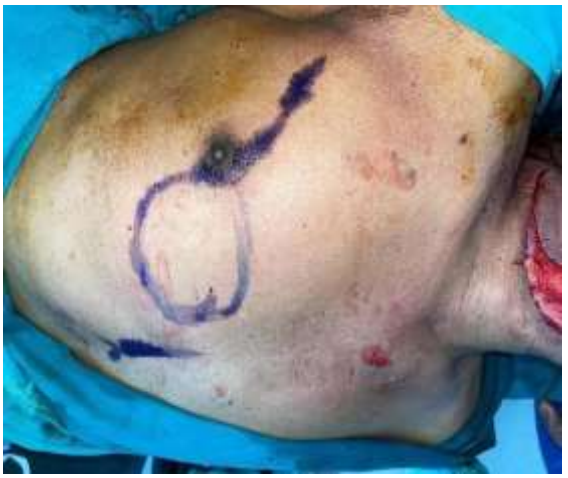


Figure 4.3: Clinical specimen



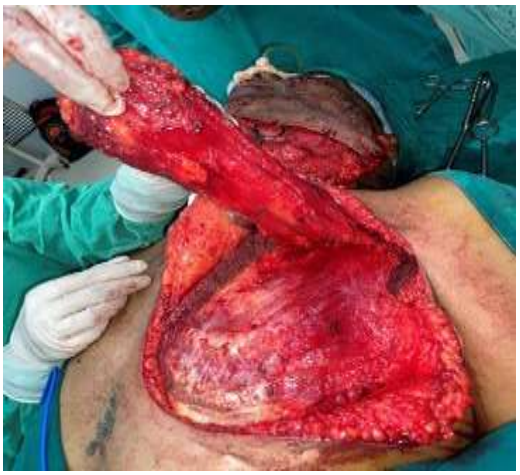


Figure 4.4 : DP saving incision was marked to take pectoralis major Myocutaneous flap.

Identifying vascular pedicle, pectoralis major Myocutaneous flap was exposed.

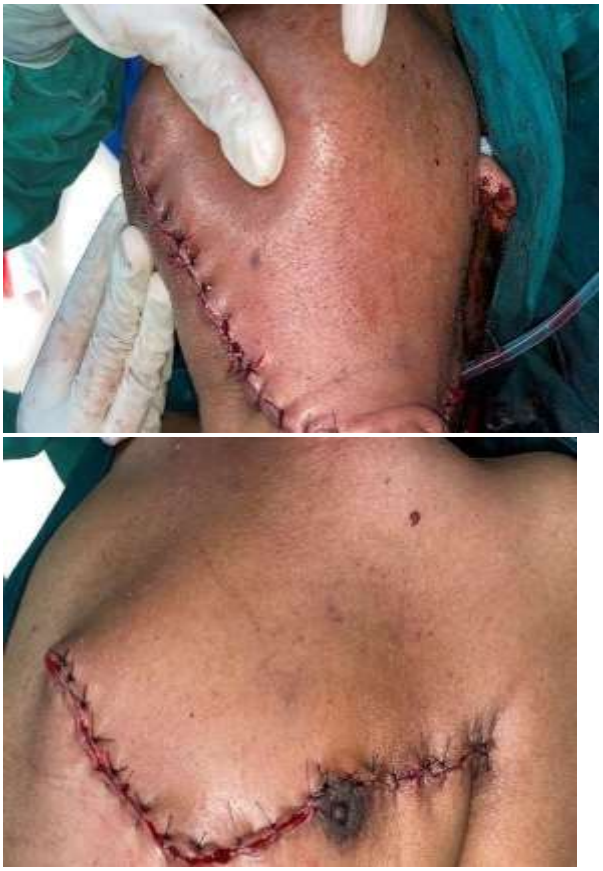


Figure 4.5: Closure done using 3-0 ethylon suture.

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HISTOPATHOLOGY

Biopsy - Medium

BIOPSY NO. :- 3120/31

SPECIMEN :-Left hemimandibulectomy specimen

CLINICAL DIAGNOSIS :- Ameloblastoma of left mandible

GROSS EXAMINATION :-

Received left hemimandibulectomy specimen measuring 10 x 4.5 x 2.5 cm. Cut section shows solid cystic tumor measuring 5 x 4 x 3.5 cms which is [illegible] away from mandibular cut margin. Inked peripheral surgical margin is 3 mm away from tumor.

Sections :- A) Tumour with inked surgical margin - 5 bit
B) Mandibular bony surgical margin - 1 bit

MICROSCOPIC EXAMINATION :-

A) Sections studied show islands infiltrated by tumor consisting of islands of odontogenic epithelium with peripheral cells, nuclei are hyperchromatic & shows palisading pattern with reverse polarity , the central core shows stellate cells along with cystic changes showing loosely arranged angular cells.Tumor is seen infiltrating the adjacent soft tissue. Inked peripheral surgical margin is 3 mm away & free of tumour infiltration. No nuclear atypia, mitoses or necrosis is noted in the sections examined. No evidence of malignancy noted in sections studied.

B) Sections studied show unremarkable bone with no evidence of tumor infiltration.

IMPRESSION :- Follicular Ameloblastoma

- Left hemimandibulectomy specimen.

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Figure 5.1: A Histopathological image showing a bone infiltrated by tumour consistingislands of odontogenic epithelium

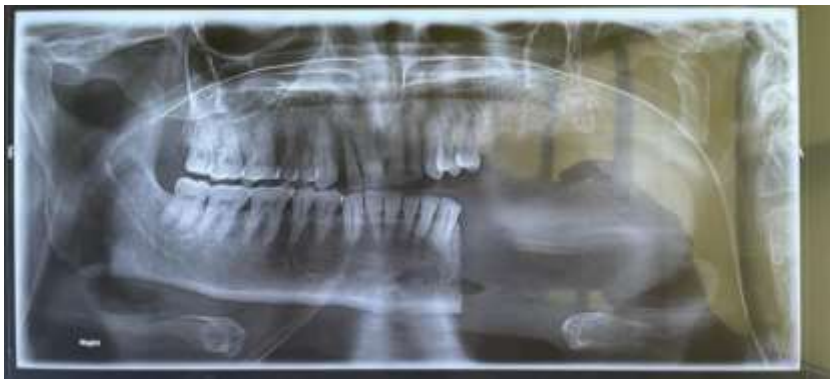

Figure 6: A panoramic radiograph obtained just after the operation showing a well-definedlarge unilocular radiolucent

DISSCUSSION

Ameloblastoma is the most studied odontogenic tumour as its controversies, pathophysiology, confusion about its types and treatment has gained attention of many researchers since ages. Lack of knowledge of ameloblastoma tumour variants has led to confusion regarding its treatment. Classification given by WHO in 2017 has summarised all the types and variants in a simple way which gives accurate idea about its invasiveness and varying clinical presentations.

Unlike any other tumor conservative treatment options are not preferred by most of the surgeons due to its growth pattern , destructive nature and high recurrence rate. Multicystic ameloblastoma , typically follicular ameloblastoma has greater tendancy to infilterate into neighbouring tissues compared to other variants.

Considering the multilocular image and the histopathological examination revealing extensive size and invasion of cell nests into surrounding area, a radical approach was chosen for better prognosis. Segmentation resection resulted in a large soft and hard tissuedefect. Thus, pectoralis mycocutaneous muscle of same side of defect was used for reconstruction. Pectoralis mycocutaneous muscle provides advantages of good amount of tissue, excellent blood supply, simple procedure with minimal morbidity and is closer to the defect site. No use of any high equipment's is needed,

which makes procedure less technique sensitive and requires short time duration.

CONCLUSION

The radical treatment option provides better outcome in terms of recurrence. Pectoralis mycocutaneous muscle flap provides large amount of soft tissue for reconstruction and is simple option when compared to other soft tissue reconstruction options.

References:

1. Ivery RH, Churchill HR (1930) The need of a standardized surgical and pathological classification of tumors and anomalies of dental origin. Am Assoc Dent Sch Trans 7:240–245.

2. Robinson L, Martinez MG. Unicystic ameloblastoma: a prognostically distinct entity.Cancer 1977;40:2278e85.